



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D119-646-243
Job Sheet 182276



Part No: D119-646-243

Job Qty: 1 ea

Part Name: AW119 Repl. Skidtube with Heavy Duty Wearplates, Float Compatible -Fits LH or RH



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 8/21/18

Job Tracking No:

Due Date: 9/7/18

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: DWG IIN-D119-646 REV D, D3905-045 REV E SHEETS 4,5, 7-14 IPP RevA: New issue DD verified by:EC
IPP REV B 12.11.05 (DEOD3905-B-1)(ecn 12-675) DD verf:JLM IPP REV:C 13.03.20 per chg003 ECN13-534
DD verf:JLM IPP REV:D 15.01.19 AS PER ECN-14-628 DD verf:JLM IPP REV:E 16.11.02 chg as per D3905
revD(DEO) DD verf:JLM IPP REV:F 17.05.19 as per dwg D3905 rev.e DD verf:JFS

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	9/7/18	9/7/18	0.00	0.00	Start Up Skid tubes-1		
110	Skid tubes	1 pcs	9/7/18	9/7/18	0.00	2.07	Skid tubes-1		
120	HandFinish	1 pcs	9/7/18	9/7/18	0.00	1.05	HandFinish1		
130	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC7-1		
150	Skid tubes	1 pcs	9/7/18	9/7/18	0.00	2.07	Skid tubes-1		
155	CNC Bend Skid tubes	1 pcs	9/7/18	9/7/18	0.00	1.20	CNC Bend Skid tube		
165	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
180	Skid tubes	1 pcs	9/7/18	9/7/18	0.00	2.07	Skid tubes-1		
190	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
200	CNC Bend Skid tubes	1 pcs	9/7/18	9/7/18	0.00	1.20	CNC Bend Skid tube		
210	Skid tubes	1 pcs	9/7/18	9/7/18	0.00	1.41	Skid tubes-1		
220	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
224	Skid tubes	1 pcs	9/7/18	9/7/18	0.00	3.70	Skid tubes-1		
225	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
226	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC10		
227	HandFinish	1 pcs	9/7/18	9/7/18	0.00	1.05	HandFinish2		
240	SprayPaint	1 pcs	9/7/18	9/7/18	0.00	0.56	Spray Paint		
242	Outsource	1 pcs	9/7/18	9/7/18			ATE003-VC	5	
245	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC14		
250	HandFinish	1 pcs	9/7/18	9/7/18	0.00	1.05	HandFinish4		
260	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
270	HandFinish	1 pcs	9/7/18	9/7/18	0.00	1.49	HandFinish4		
280	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
285	HandFinish	1 pcs	9/7/18	9/7/18	0.00	1.05	HandFinish3		
286	QC	1 pcs	9/7/18	9/7/18	0.00	0.00	QC5		
288	DC	1 pcs	9/7/18	9/7/18	0.00	0.00	DC		
290	Packaging	1 pcs	9/7/18	9/7/18	0.00	0.00	Packaging3-1		
300	QC21-FG	1 Ea	9/7/18	9/7/18	0.00	0.00	QC21		

Part Op 110 - 1- Inspect Mat'l D2500-1-190 for damage 2- Ensure squareness of ends
Descriptions: 120 - Chemical Conversion Coat per QSI005 4.1

130 - QC7-Inspect Chemical Conversion Coat
150 - 1- Install drill jig DT9480 drill all x-bolt spacer holes using 3/16 drill first side only. 2- 2nd side, locating from first saddle holes use DT9861 A/B to drill 2nd side fwd saddle holes. 3- 2nd side locating from fwd saddle drill remaining crossbolt spacer holes using DT9477 4- Scribe batch # inside aft end of tube
155 - 1- Bend AFT end of tube using CNC Bender 1 and bend prog. D3905 AFT as per dwg D3905. Must use bending Aid DT9538, located 23.25" from Aft end. 2- Ensure bending Aid DT9538 is positioned correctly, that the bender set up in on full wide and that the indexing ridge is covered with graphite grease.
165 - QC5- Inspect part completeness to step on W/O
180 - 1- Verify dimension of bend as per dwg D3905 2- Buff out marks left from bending. 3- Drill Aft Float bag holes using DT9493 as per dwg D3905 detail G and section F-F, open to finished size 4- Open x-bolt spacer holes to finished size as per dwg (sections D-D and E-E) ***DO NOT OPEN FWD SADDLE HOLES*** 5- Drill Aft wearplate and wearpad holes using DT9546 and DT9545 as per dwg D3905 detail G open to finished size 6- Deburr, blow out chips from inside of tube 7- Bond web in place as per Dwg D3905 & QSI 015. A/R Sikaflex-291 1138074 Sikaflex expire date: 19-03-06 Start: _____ Time: _____ Finish: _____ Time: _____ ***** (Adhere for 12 hours)*****
190 - QC5- Inspect part completeness to step on W/O
200 - 1- Bend Fwd end of tube using bender 1 and bend prog. D3905 & Folio -04 Fwd. Use bending aid DT9544 ensure proper positioning 2- Cut Fwd end of tube as per dwg. ***VERIFY MEASUREMENT BEFORE CUTTING***
210 - 1- Buff out marks left from bending 2- Drill Fwd cap holes using DT8215. 3- Open Fwd saddle holes to finished size as per dwg 4- Drill Fwd x-bolt hole and open to finished size using DT9816 5- Drill 1.87" and 3.74 holes using DT10045 A&B locate from FWD saddle hole. (verify measurement) as per dwg. 6- Drill towing hole using DT10047 locate from FWD saddle hole and open to finished size. 7- C'sink FWD cap hole as per detail "C" 10- Deburr, blow out chips from inside of tube.
220 - QC5- Inspect part completeness to step on W/O
224 - NOTE: TACK IN 2 MOST FWD X-BOLT SPACERS AND TEST FIT FWD GROUND HANDLING FIXTURE, IF FIXTURE FITS WELL THEN PROCEED. FIXTURE DT10091. 1- Countersink x-bolt holes as per dwg 2- Remove alodine prepare for welding 3- Insert x-bolt spacers 4- Weld x-bolt spacer as per dwg A/R Alum rod Batch: 138673 5- Grind welds flush as per dwg 6- Counter bore x-bolt holes as per dwg 7- Deburr 8- Pick D2855-5 cap and transfer drill missing hole. Deburr and identify cap with skidtube batch#.
225 - QC5- Inspect part completeness to step on W/O TEST FIT USING FIXTURE DT10091.
226 - QC10- Inspect visual per QSI004- ground welds
227 - Pressure Wash per QSI005 4.3
240 - Spray Painting per QSI005 4.2 *****AS PER DEO DETAIL "F" NOTE 8, SHEET 8 MASK THIS AREA, DO NOT APPLY PRIMER OR PAINT***** PRIME AS PER DWG AND QSI 005 4.2 BATCH: _____ PAINT WHITE AS PER DWG AND QSI 005 4.2 BATCH: _____
245 - QC14- Inspect Spray Paint
250 - Assemble as per dwg 1-Install inserts as per Dwg D3905.
260 - QC5- Inspect part completeness to step on W/O
270 - 1-Install wearpads, gaskets and wearplates as per Dwg D3905. Put sikaflex in insert before installing bolts and washers A/R Sikaflex-240/-291 1139947 Sikaflex expire date: 19-2 2- install plugs assembly as per dwg. 3-Inspect for foreign objects as per QSI 024 4 -Install D2855-3 Cap and seal with Sikaflex. Clean excess adhesive. A/R Sikaflex-240/-291 1139947 Sikaflex expire date: 19-2 5-Install insert in D2855- Cap. Install cap and seal with Sikaflex. Clean excess adhesive. A/R Sikaflex-240/-291 _____ Sikaflex expire date: _____ 6- Install (2) D5101-041 and (1) D5101-047 as per dwg by using DT10117
280 - QC5- Inspect part completeness to step on W/O
285 - Wing Walk as per dwg QSI005 4.4 Batch 5098126
286 - QC5- Inspect part completeness to step on W/O
288 - Document Control Photocopy bluefile & type labels per PPP D119-646-243 CHG 005
290 - Identify as per dwg & Stock Location: _____
300 - QC21- Final Inspection - Work Order Release

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D2500-1-190	Ext'n -I' Beam Tube 4"	1 Ea (1 ea)	90-Start up Operation	5081201
D3681-1	Spacer	12 Ea (8 ea)	90-Start up Operation	5084724
D3903-1	Spacer	12 Ea (12 ea)	90-Start up Operation	5116454
D3885-3	Float Web	1 Ea (1 ea)	180-Skidtubes	50916470
D2579	Crossbolt Spacer	2 Ea (2 ea)	224-Skidtubes	5051552
D2855-5	Cap	1 Ea (1 ea)	224-Skidtubes	5082078
ALS4-1032-130	Rivnut	10 Ea (10 ea)	250-HandFinish	5007279
ALS4-1032-225	Rivnut	1 Ea (1 ea)	270-HandFinish	5058138
AN3C46A	Bolt	4 Ea (4 ea)	270-HandFinish	5095398
AN3C50A	Bolt	4 Ea (4 ea)	270-HandFinish	5095437
AN3C5A	Bolt	12 Ea (12 ea)	270-HandFinish	5095214
AN4C46A	Bolt	3 Ea (3 ea)	270-HandFinish	5093600
D2855-3	Cap	1 Ea (1 ea)	270-HandFinish	5066002
D3411-3	Washer	16 Ea (16 ea)	270-HandFinish	4x5099749
D3672-1	Washer, Phenolic	2 Ea (2 ea)	270-HandFinish	5163255-1
D3847-1	Wearpad	1 Ea (1 ea)	270-HandFinish	5084440

D3847-11	Wearpad	1 Ea (1 ea)	270-HandFinish	5058269.
D3849-045	Aft Heavy-Duty Wearplate, Float Skid Compatible	1 Ea (1 ea)	270-HandFinish	5105505
D3849-047	Fwd Heavy-Duty Wearplate, Float Skid Compatible	1 Ea (1 ea)	270-HandFinish	5103103
D3904-1	Washer	16 Ea (16 ea)	270-HandFinish	5105879.
D5101-041	Crossbolt Spacer Assembly	2 Ea (2 ea)	270-HandFinish	5107351
D5101-047	Crossbolt Spacer Assembly	1 Ea (1 ea)	270-HandFinish	5103114
D5101-3	Insert	6 Ea (6 ea)	270-HandFinish	5107506.
D5101-5	Insert	6 Ea (6 ea)	270-HandFinish	5107507.
MS21043-3	Nut	8 Ea (8 ea)	270-HandFinish	5083543-1
MS21043-4	Nut	3 Ea (3 ea)	270-HandFinish	5092684.
MS24694-C52	Screw	2 Ea (2 ea)	270-HandFinish	5067269.
NAS1149C0332R	Washer	12 Ea (8 ea)	270-HandFinish	5071663
NAS1149D0416J	Washer	3 Ea (3 ea)	270-HandFinish	FM131511

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D2500-1-190	1	13	0
	D3681-1	8	310	0
	D3903-1	12	94	0
180-Skidtubes	D3885-3	1	14	0
224-Skidtubes	D2579	2	221	0
	D2855-5	1	72	0
250-HandFinish	ALS4-1032-130	10	12,589	0
270-HandFinish	ALS4-1032-225	1	2,806	0
	AN3C46A	4	169	0
	AN3C50A	4	215	0
	AN3C5A	12	2,810	0
	AN4C46A	3	244	0
	D2855-3	1	16	0
	D3411-3	16	60	0
	D3672-1	2	1,010	0
	D3847-1	1	56	0
	D3847-11	1	12	0
	D3849-045	1	0	0
	D3849-047	1	4	0
	D3904-1	16	69	0
	D5101-041	2	2	0
	D5101-047	1	9	0
	D5101-3	6	20	0
	D5101-5	6	6	0
	MS21043-3	8	1,140	0
	MS21043-4	3	1,338	0
	MS24694-C52	2	167	0
	NAS1149C0332R	8	4,666	0
	NAS1149D0416J	3	2,888	0

Part Specifications				
Specifications could not be found.				



WORK ORDER
NO. 182276 M-5 1280821

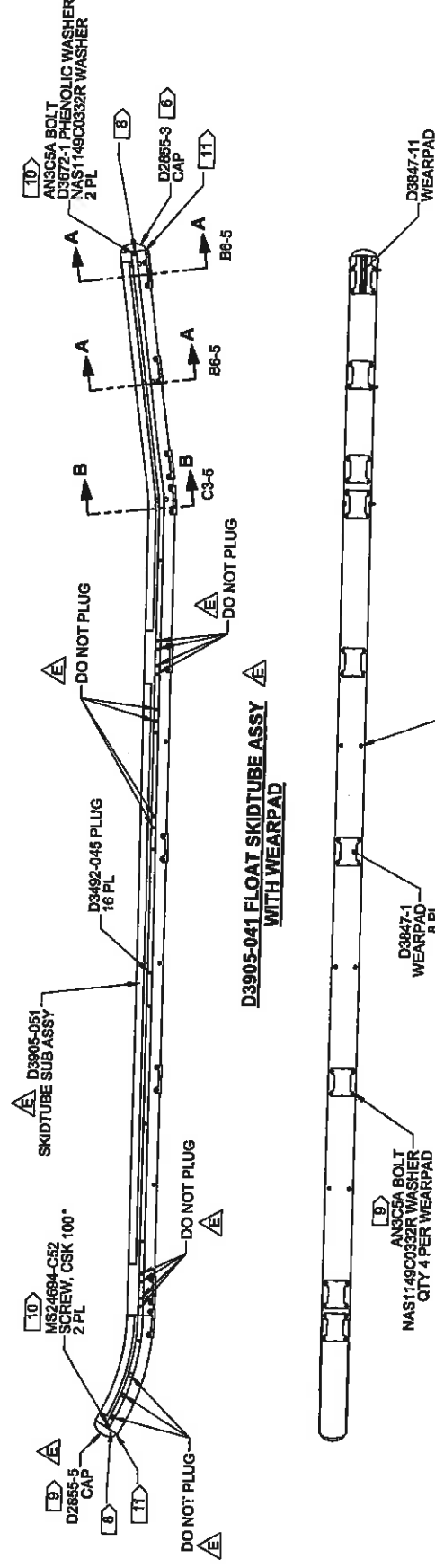
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ITEM	QTY	PIN	DESCRIPTION
1	X	D3905-041	SKIDTUBE ASSY
2	1	D2855-3	CAP
3	1	D2855-5	CAP
4	2	D3482-045	PLUG
5	8	D3872-1	PHENOLIC WASHER
6	1	D3847-1	WEARPAD
7	1	D3905-051	SKIDTUBE SUB ASSEMBLY
8	2	D5101-041	CROSSBOLT SPACER ASSY
9	1	D5101-047	CROSSBOLT SPACER ASSY
10	8	D5101-3	INSERT
11	6	D5101-5	INSERT

ITEM	QTY	P/N	DESCRIPTION
12	1	ALS4-1032-225	INSERT
13	6	AN3C4A	BOLT
14	38	AN3C6A	BOLT
15	3	AN4C6A	BOLT
16	3	MS21043-4	NUT, SELF-LOCKING
17	2	MS24694-C52	SCREW, CSK 100°
18	44	NAS1148C0332R	WASHER
19	6	NAS1148C0416R	WASHER



**D3905-041 FLOAT SKIDTUBE ASSY
WITH WEARPAD**

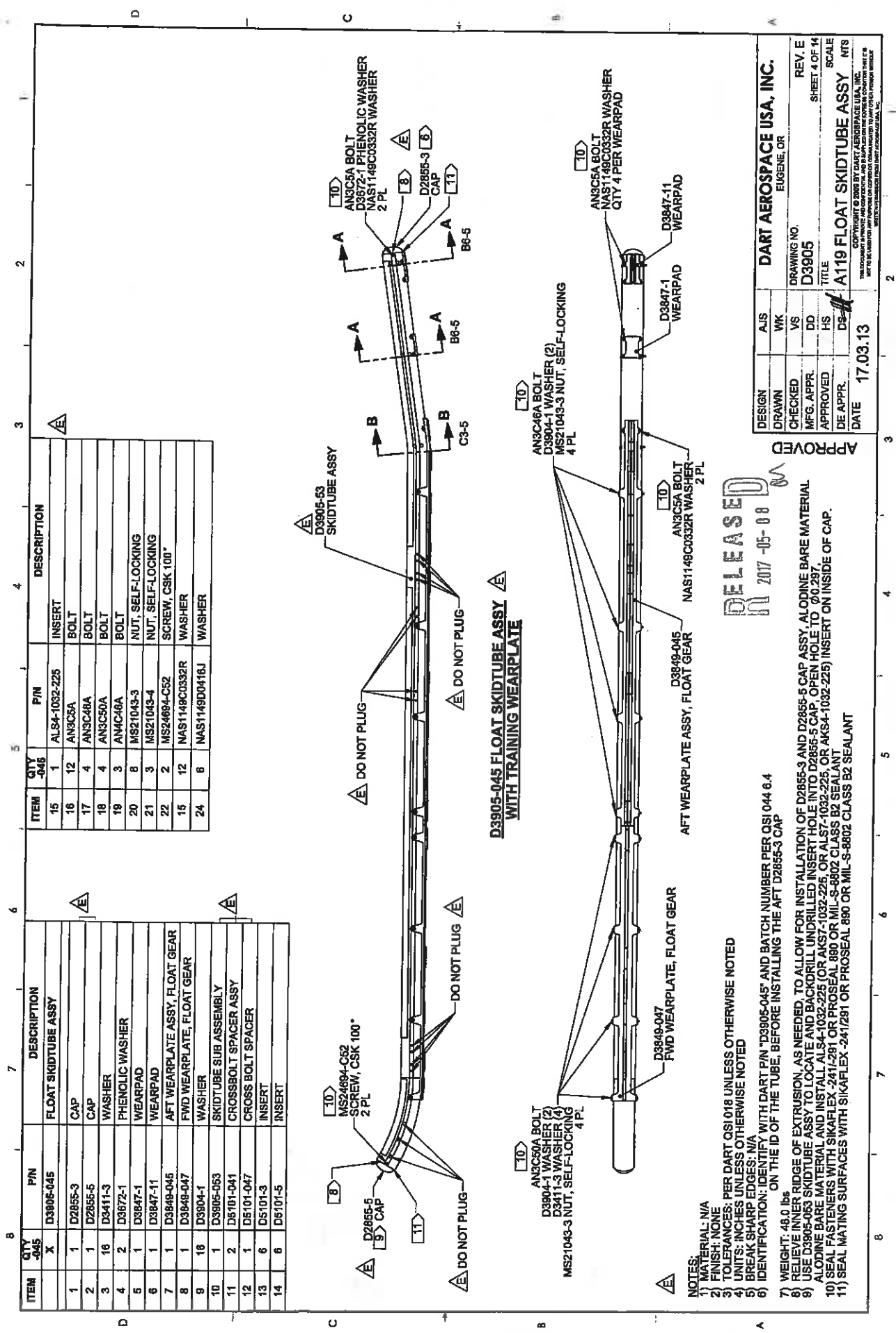


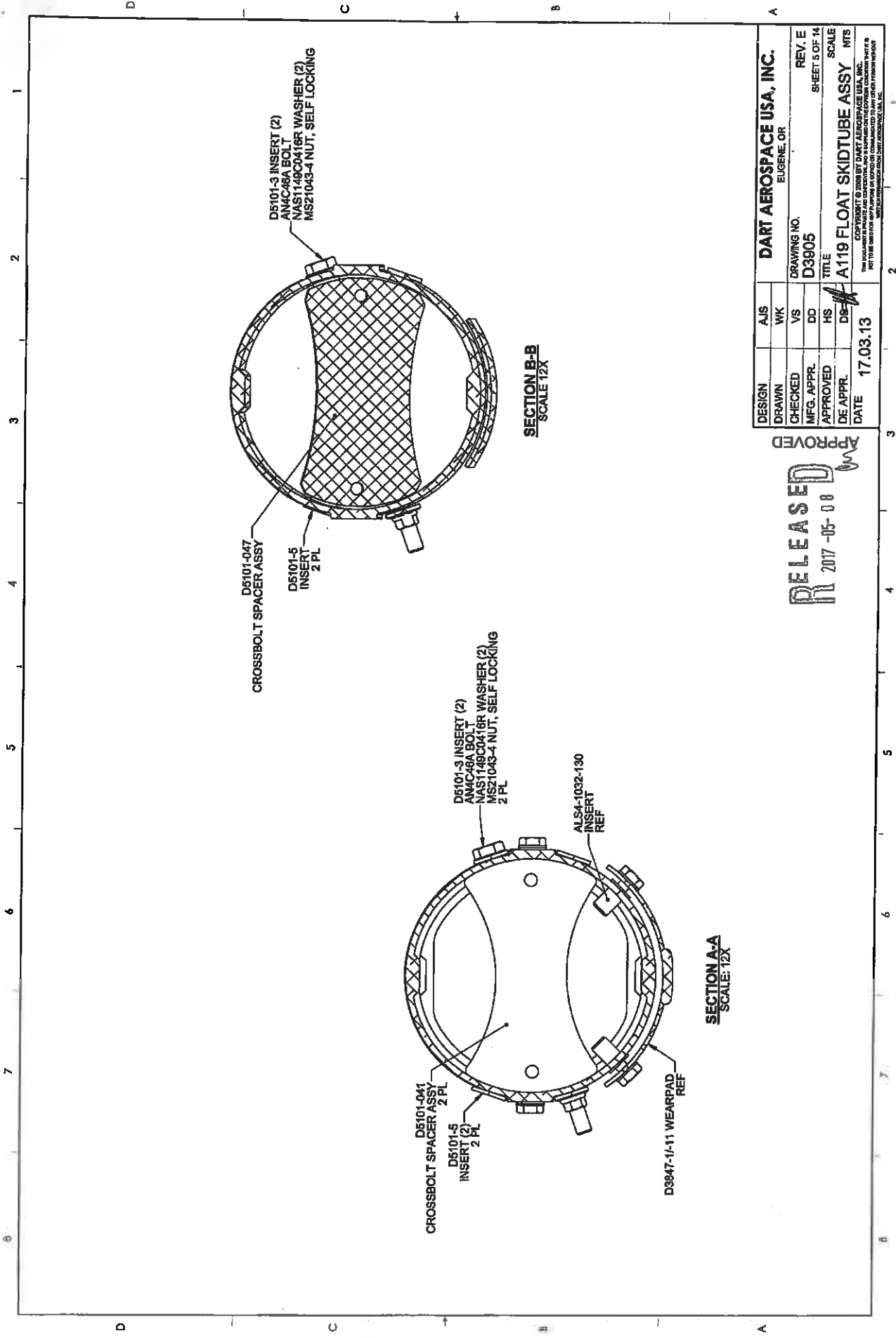
- NOTES:**
- 1) MATERIAL: N/A
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY WITH DART PIN "D3905-041" AND BATCH NUMBER PER QSI 044 6.4 ON THE ID OF THE TUBE, BEFORE INSTALLING THE AFT D2855-3 CAP
 - 7) WEIGHT: 35.4 lbs
 - 8) RELIEVE INNER RIDGE OF EXTRUSION, AS NEEDED, TO ALLOW FOR INSTALLATION OF D2855-3 AND D2855-5 CAP ASSY. ALODINE BARE MATERIAL
 - 9) USE D3905-051 SKIDTUBE ASSY TO LOCATE AND BACKDRILL UNDRILLED INSERT HOLE INTO D2855-5 CAP. OPEN HOLE TO Ø0.297
 - 10) ALODINE BARE MATERIAL AND INSTALL ALS4-1032-225 (OR ALS7-1032-225 OR ALS4-1032-225) INSERT ON INSIDE OF CAP.
 - 11) SEAL FASTENERS WITH SIKAFLEX -241/291 OR PROSEAL 800 OR MIL-S-8802 CLASS B2 SEALANT

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2017-05-08

DESIGN	AJS	DART AEROSPACE USA, INC.	
DRAWN	WK	EUGENE, OR	
CHECKED	VS	DRAWING NO.	REV. E
MFG. APPR.	DD	D3905	SHEET 2 OF 14
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY	
DATE	17.03.13	NTS	

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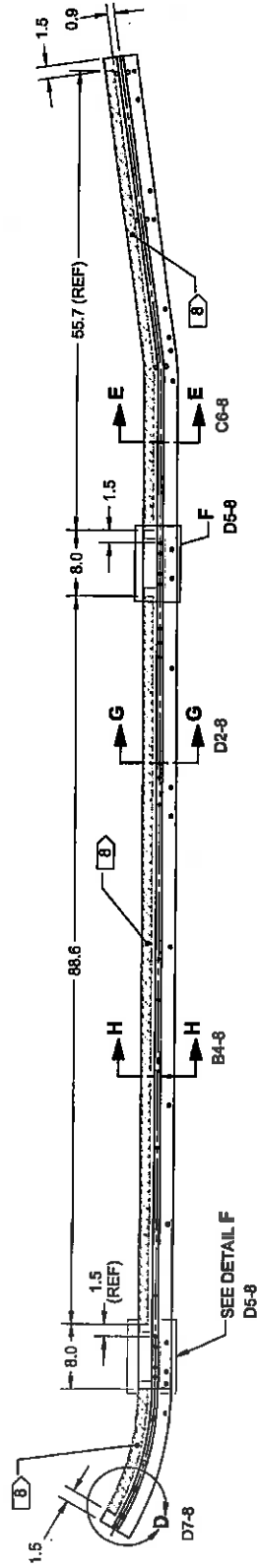


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CHECKED	VS	DRAWING NO.	D3905	REV. E
MFG. APPR.	DD	SHEET 5 OF 14		
APPROVED	HS	TITLE		
DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY		
DATE	17.03.13	SCALE MTS		

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ITEM	QTY	PIN	DESCRIPTION
	X	D3905-051	SKIDTUBE SUB ASSY
1	2	D2579	CROSS BOLT SPACER
2	8	D3681-1	SPACER
3	12	D3903-1	SPACER
4	1	D3905-061	SKIDTUBE SUB ASSEMBLY
5	42	ALS4-1032-130	INSERT



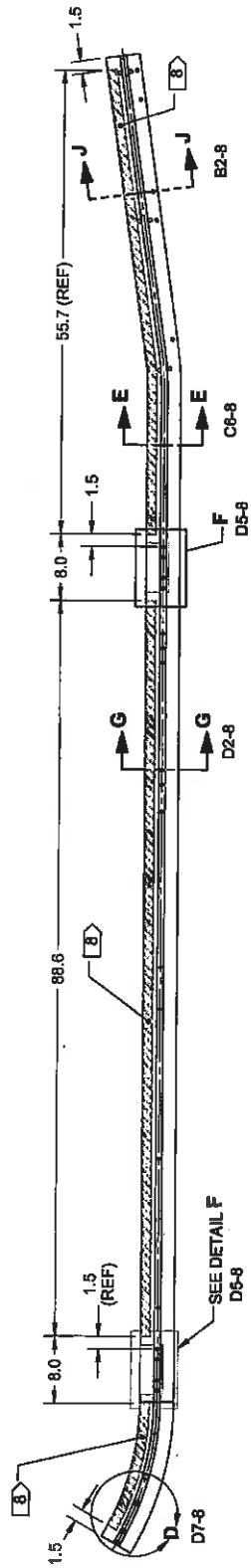
D3905-051 SKIDTUBE SUB ASSEMBLY

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2.2.4
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY AT NEXT ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) AFTER APPLICATION OF FINISH, PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 0.50" ABOVE LOCATION RIDGE, PER QSI 005 SECTION 4.4

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MFG. APPR.	DD	REV. E
APPROVED	HS	SHEET 6 OF 14
DE APPR.	DS	TITLE A119 FLOAT SKIDTUBE ASSY
DATE	17.03.13	SCALE NTS

ITEM	QTY	PIN	DESCRIPTION
	453		
	X	D3905-053	SKIDTUBE SUB ASSY
1	2	D2579	CROSS BOLT SPACER
2	8	D3881-1	SPACER
3	12	D3903-1	SPACER
4	1	D3905-063	SKIDTUBE SUB ASSEMBLY
5	10	ALS4-1032-130	INSERT



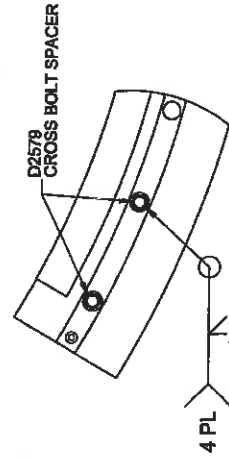
D3905-053 SKIDTUBE SUB ASSEMBLY

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2.2.4
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY AT NEXT ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) AFTER APPLICATION OF FINISH, PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 0.50" ABOVE LOCATION RIDGE, PER QSI 005 SECTION 4.4

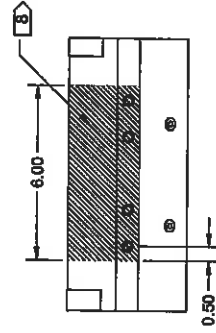
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R 2017-05-08
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CHECKED	VS	
MFG. APPR.	DD	DRAWING NO. D3905
APPROVED	HS	TITLE
DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY
DATE	17.03.13	SCALE
		RTS

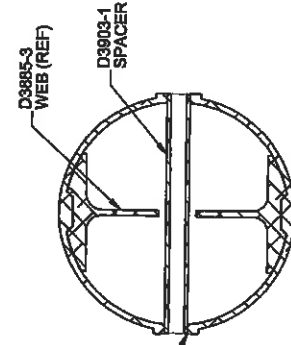
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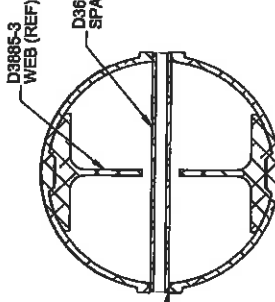
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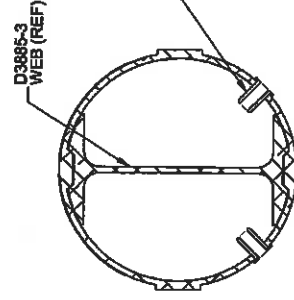
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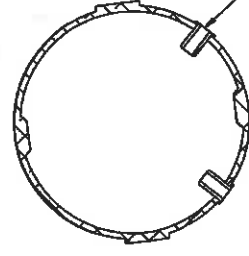
SECTION G-G
SCALE: 7X
12 PL



SECTION E-E
SCALE: 7X
8 PL



SECTION H-H
SCALE: 7X
D3905-51 21 PL



SECTION J-J
SCALE: 7X
D3905-53 5 PL

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART Q81005 4.2.2.4
 - 3) TOLERANCES: PER DART Q81018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) MASK THIS AREA AND DO NOT APPLY PRIMER OR PAINT
 - 9) AFTER DRILLING AND BENDING ASSEMBLY, PERFORM THE FOLLOWING FOR THE SECTION G-G Ø0.375 HOLES ONLY:
 - i) CHAMFER HOLES Ø0.475 x 45°
 - ii) INSERT D3903-1 SPACER
 - iii) WELD INTO PLACE AND GRIND FLUSH
 - iv) DEBURR HOLES
 - 10) AFTER DRILLING AND BENDING ASSEMBLY, PERFORM THE FOLLOWING FOR THE SECTION E-E Ø0.313 HOLES ONLY:
 - i) CHAMFER HOLES Ø0.354 x 45° OR 0.050 DEEP x 45° (BOTH SIDES)
 - ii) INSERT D3681-1 SPACER
 - iii) WELD INTO PLACE AND GRIND FLUSH
 - iv) DEBURR HOLES
 - 11) WELD PER DART Q81004

APPROVED

RELEASED
R 2017-05-08

DESIGN	AJS	WK	VS	DD	HS	DS	DATE	17.03.13
DRAWN								
CHECKED								
MFG. APPR.								
APPROVED								
DE APPR.								

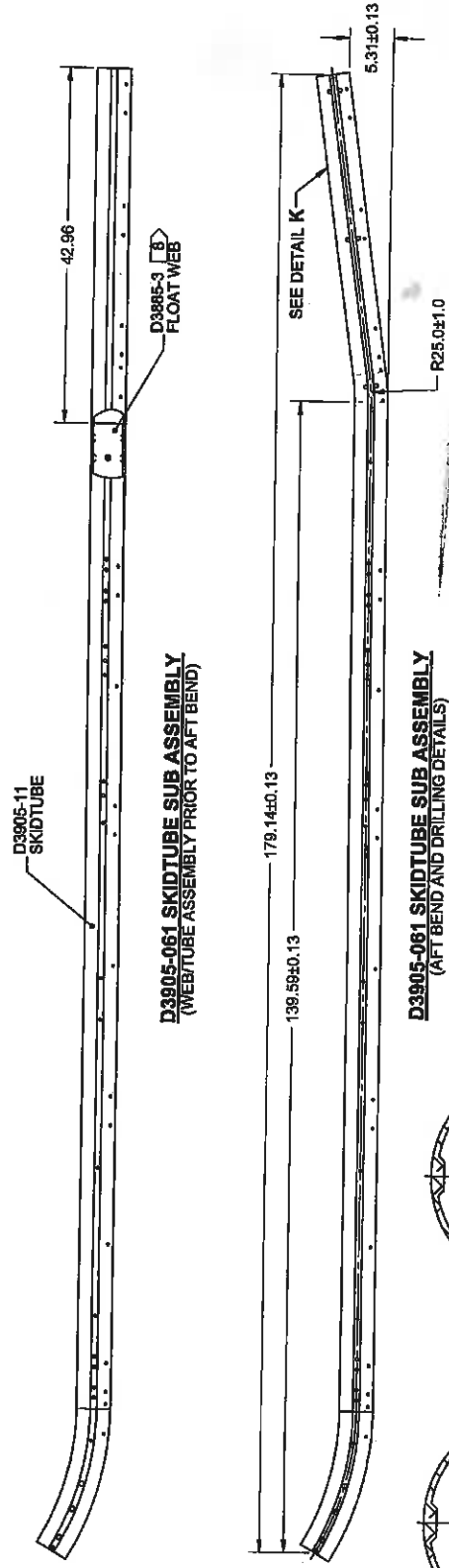
DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO. D3905
REV. E
SHEET 8 OF 14

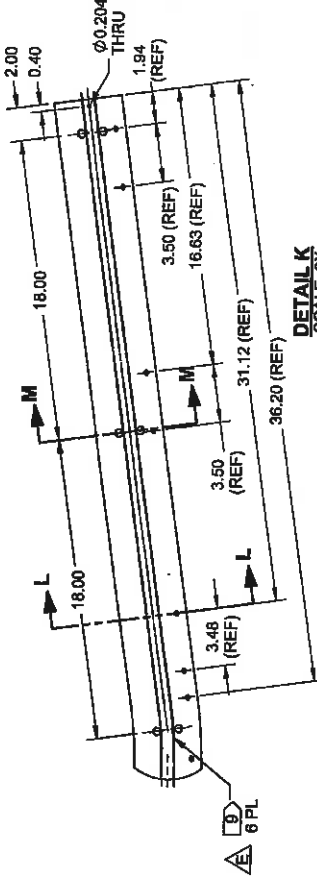
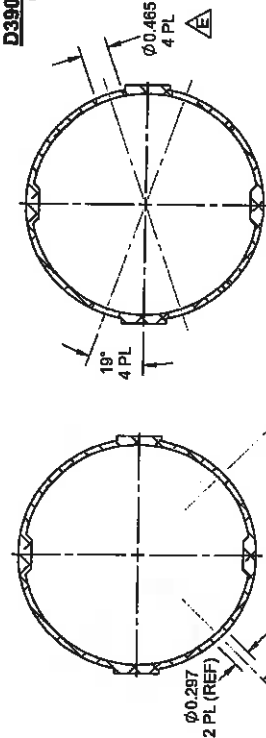
TITLE A119 FLOAT SKIDTUBE ASSY
SCALE NTS

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ITEM	QTY	PIN	DESCRIPTION
			SKIDTUBE SUB ASSEMBLY
1	1	D3885-3	FLOAT WEB
2	1	D3905-11	SKIDTUBE



D3905-061 SKIDTUBE SUB ASSEMBLY
(AFT BEND AND DRILLING DETAILS)



DETAIL K
SCALE: 2X

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005.4.1
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) INSERT D3885-3 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/281 ADHESIVE PER DART QSI 015 AFTER BENDING. ENSURE HOLES LINE-UP
 - 9) RELIEVE RIDGE FLUSH WITH SKIDTUBE FOR INSERT CLEARANCE, MAX 0.130 INTO RIDGE

RELEASED
2017-05-08

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DESIGN	AJS	WK	VS	DD	HS	DS	DATE	17.03.13
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CHECKED								
MFG. APPR.								
APPROVED								
DE APPR.								
DATE								

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TITLE **A119 FLOAT SKIDTUBE ASSY**

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SEE DETAIL U

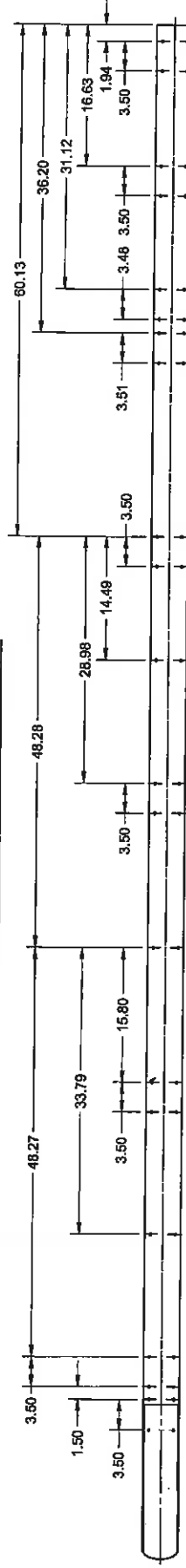
Ø0.313
THRU, 8 PL

W
BS-11

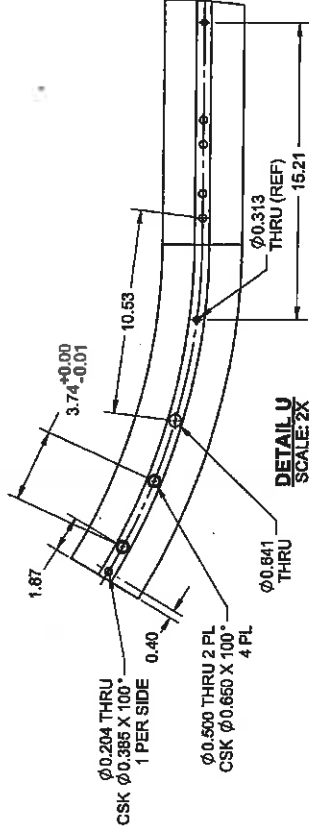
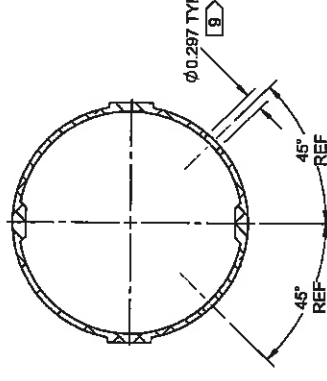
W
BS-11

V
BS-11

D3905-11 SKIDTUBE DRILLING DETAIL



WEARPAD/WEARPLATE HOLE PATTERN
FOR REFERENCE ONLY
DRILL USING DT9613/DT9645 TEMPLATE



SECTION T-T
SCALE: 2X
21 PL



- NOTES:
- 1) MATERIAL: MAKE -11 DRILL DETAIL FROM -1 FWD BEND DETAIL
 - 2) FINISH: NA
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) BREAK SHARP EDGES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
 - 7) WEIGHT: NA
 - 8) PICK UP ON PILOT HOLES
 - 9) USE DART DRILL TEMPLATE DT9613/DT9645 TO LOCATE AND DRILL Ø0.287 HOLES FOR WEARPAD/WEARPLATE INSERTS.

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2017-05-08

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APPROVED	HS		
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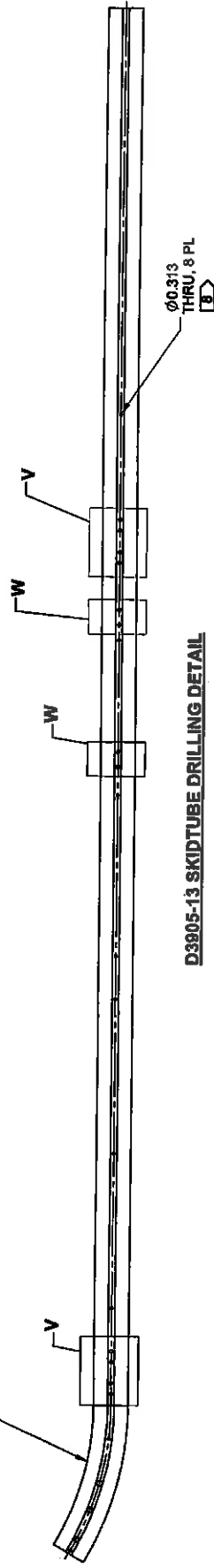
SHEET 11 OF 14

TITLE A119 FLOAT SKIDTUBE ASSY

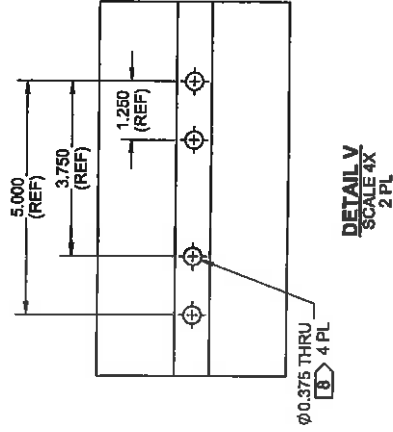
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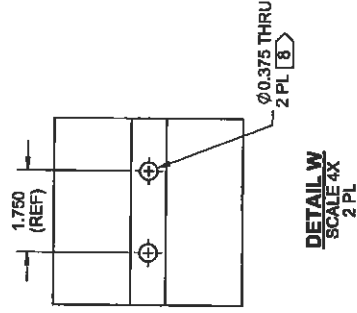
SEE DETAIL U
B8-10



D3905-13 SKIDTUBE DRILLING DETAIL



DETAIL V
SCALE 4X
2 PL



DETAIL W
SCALE 4X
2 PL

- NOTES:
- 1) MATERIAL: MAKE -13 DRILL DETAIL FROM -1 FWD BEND DETAIL
 - 2) FINISH: N/A
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) PICK UP ON PILOT HOLES

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0.37.

D3905-1 SKIDTUBE FWD BEND DETAIL

180.5 (REF)
179.50±0.13
182.3±0.13
(DISTANCE TO TANGENT)
R33.5±1.0
5.07±0.18

NOTES:
1) MATERIAL: MAKE -1 FWD BEND DETAIL FROM -3 PILOT HOLE DETAIL
2) FINISH: N/A
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
7) WEIGHT: N/A
8) DAMAGE TOLERANCE ON FWD BEND:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 8.5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020" DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.

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TITLE

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SHEET 13 OF 14

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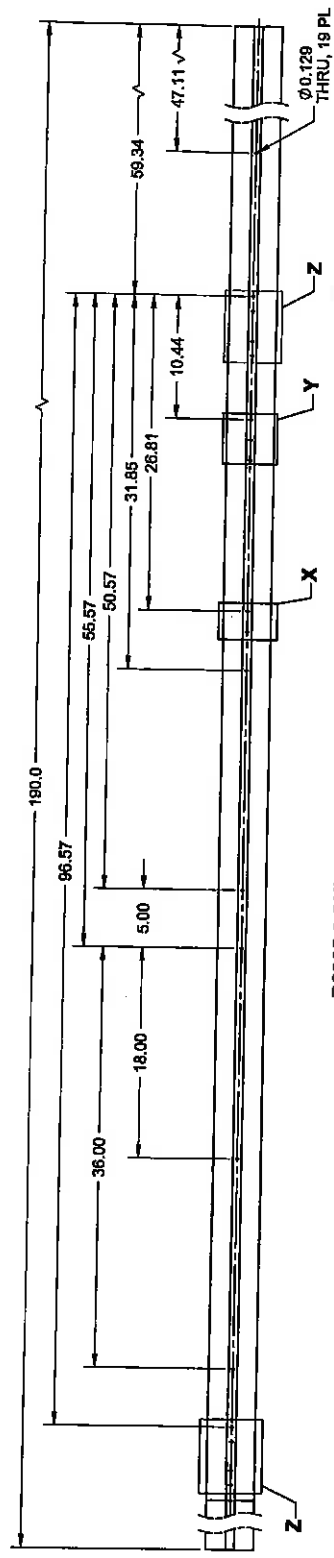
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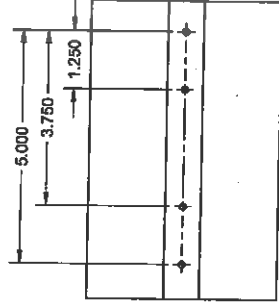
- 1) MATERIAL: MAKE -1 FWD BEND DETAIL FROM -3 PILOT HOLE DETAIL
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
- 7) WEIGHT: N/A
- 8) DAMAGE TOLERANCE ON FWD BEND:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 8.5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP 0.020" DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.

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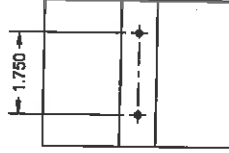
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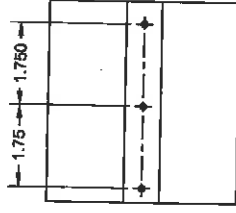
D3905-3 SKIDTUBE PILOT HOLE DETAIL



DETAIL Z
SCALE: 4X



DETAIL X
SCALE: 4X



DETAIL Y
SCALE: 4X

- NOTES:
1) MATERIAL: MAKE FROM D2500-1-180 EXTRUSION
2) FINISH: N/A
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
7) WEIGHT: N/A

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Traveller Change Request

Part#: 0119-646-243

Job#: 182276

Name Devin Donohue

Date 2018/28/08

Workcenter Start up Skid tubes -1

Operation # 90

Issue:

Quality ☐

Wrong Routing ☒

Op Description ☐

Missing Information ☐

Material ☐

Other ☐

Change requested: D3681-1 and D3903-1 at startup should
be at 224

DAS
10
9:00

Name _____

Date _____

Workcenter | _____

Operation # _____

Issue:

Quality ☐

Wrong Routing ☐

Op Description ☐

Missing Information ☐

Material ☐

Other ☐

Name _____

Date _____

Workcenter _____

Operation # _____

Issue:

Quality ☐

Wrong Routing ☐

Op Description ☐

Missing Information ☐

Material ☐

Other ☐

Change requested: _____

Under Review Notification

Raised By: Nazim Ould-Brahim
Date: 18-08-24

Product #: D119-646
Product Name: 119 Float Skidtubes

Part Number (D-Part and 9-Digit) (eg. D3535-11) (eg. D3535-25) (eg. D206-642-143) (eg. RBEM324U3010101-1)	Drawing or Document & <u>Current</u> Affected Revision for each part listed	"Y" or "N" Required for Each Part Do not leave blank							Reserved ECN Log Number	Instructions Relevant to Each Part (including whether CHG #'s will be affected)
		HOLD SHIPMENT	Red Tag/Quarantine Stock	Advise Customers	Stop Production	Re-Work Stock	IPP Under Review	Product Specifications Under Review ("Bluefiles")		
D119-646-C13	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D119-646-014	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D119-646-113	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D119-646-114	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D119-646-213	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG007
D119-646-214	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG007
D119-646-043	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D119-646-143	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D119-646-243	IIN-D119-646 Rev D	Y	Y	N	Y	Y	Y	Y	18-789	CHG006
D3905-041	D3905 Rev E	Y	Y	N	Y	Y	Y	Y	18-789	
D3905-043	D3905 Rev E	Y	Y	N	Y	Y	Y	Y	18-789	
D3905-045	D3905 Rev E	Y	Y	N	Y	Y	Y	Y	18-789	
Description of Issue:		Y	Y	N	Y	Y	Y	N	18-789	

Description of Issue:

Hoist Cable Guard provisions not drilled on float tubes. This has caused issues shipping to Augusta.
Eng working on dwg fix, in the meantime all tubes will have to be updated as appropriate with hoist guard provisions.

Distribution:

VP Operations	Director of Engineering	Customer Support Manager	Technical Support
Director of Operations	Chief Engineer	Production Engineers	Product Manager - Solutions Provider
Director Quality Assurance	Engineering Project Managers	Production Planners	Supply Chain Director
QC Coordinator	Engineering Clerk	Purchasing Manager	Marketing Eugene

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DART SERVICE INSTRUCTION
TO AMEND INSTALLATION INSTRUCTIONS IIN-D119-846 REV. D
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D119-846 REV. 3
REF FAA STC: SR02024SE
REF EASA STC: 10040294

1.0 PURPOSE:

The purpose of this Dart Service Instructions is to add D119-646-313/-314 Skidtube Protector Kit to make the D119-646-011/-012/-041/-111/-112/-141/-211/-212/-241 Skidtube Kits and the D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 Float Skidtube Kits compatible with the 109-0812-68-105 Hoist Structural Provision Kit and the 109-0816-18-301 Rappelling Kit. The D119-646-313 Skidtube Protector, LH replaces the 109-B710-05-201 kit and the D119-646-314 Skidtube Protector, RH replaces the 109-B710-05-202 kit.

2.0 D119-646-011/-012/-041/-111/-112/-141 STANDARD SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 2.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 2.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\phi 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. Caution: Drill perpendicular to the skidtube ridge.
- 2.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. Caution: Drill perpendicular to the skidtube ridge.
- 2.4 Countersink 4x 5/16" holes to $\phi 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 2.5 Repeat steps 2.2 to 2.4 for the opposite side of the skidtube.
- 2.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 2.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling Jig and D5374-3 Bushings.

APPROVED

C	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR FLOAT SKIDTUBES D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243, REF CIR 17-101	VS	17.06.27
B	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR SKIDTUBE ASSY D119-646-011/-012/-111/-112/-041/-141/-241 CHG 005 & SUBSEQUENT AND SKIDTUBE ASSY D119-646-211/-212 CHG 006 & SUBSEQUENT. ADDED NAS1149D0316J WASHERS TO BOM.	WK	17.02.16
A	NEW ISSUE	RF	15.12.10
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
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CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 1 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
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3.0 D119-646-211/-212/-241 STANDARD SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-211/212 Skidtube at CHG 005 and prior, and D119-646-241 at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit Installation:

- 3.1 Temporarily remove D3849-043 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 3.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\phi 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. Caution: Drill perpendicular to the skidtube ridge.
- 3.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. Caution: Drill perpendicular to the skidtube ridge.
- 3.4 Countersink 4x 5/16" holes to $\phi 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 3.5 Repeat steps 3.2 to 3.4 for the opposite side of the skidtube.
- 3.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 3.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-211/-212 Skidtube at CHG 006 and subsequent and D119-646-241 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

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DE APPR.	DS	SKIDTUBE PROTECTOR KIT NTS
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4.0 D119-646-013/-014/-043/-113/-114/-143 FLOAT SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-013/-014/-043/-113/-114/-143 Float Skidtube to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 4.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 4.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\phi 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. Caution: Drill perpendicular to the skidtube ridge.
- 4.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. Caution: Drill perpendicular to the skidtube ridge.
- 4.4 Countersink 4x 5/16" holes to $\phi 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 4.5 Repeat steps 4.2 to 4.4 for the opposite side of the skidtube.
- 4.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 4.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

5.0 D119-646-213/-214/-243 FLOAT SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-213/-214/-243 Float Skidtube to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 5.1 Temporarily remove D3849-045 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 5.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\phi 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. Caution: Drill perpendicular to the skidtube ridge.
- 5.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. Caution: Drill perpendicular to the skidtube ridge.
- 5.4 Countersink 4x 5/16" holes to $\phi 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 5.5 Repeat steps 5.2 to 5.4 for the opposite side of the skidtube.
- 5.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 5.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

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DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
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6.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-011/-012/-041/-111/-112/-141:

- 6.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 6.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 6.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.7 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.8 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.9 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
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7.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-211/-212/-241:

- 7.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 7.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-211/-212 Skidtube at CHG 006 and subsequent, and D119-646-241 Skidtube at CHG 005 and subsequent, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 7.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.7 Reinstall the D3849-043 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 7.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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8.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-013/-014/-043/-113/-114/-143:

- 8.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 8.2 Trim the D5369-1/-2 Cable Guard per Figure 7.
- 8.3 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-013/-014/-043/-113/-114/-143 Float Skidtube, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 8.4 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.5 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.6 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.7 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 2x AN3-47A bolts, 2x D5374-1 Bushings, 2x D4506-3 Washers, 4x NAS1149D0332J washers, 2x MS21042L3 nuts as shown in Figure 7 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 2x AN3-47A bolts, 2x D5374-1 Bushings, 2x D4506-3 Washers, 4x NAS1149D0332J washers, 2x MS21042L3 nuts as shown in Figure 7, Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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9.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-213/-214/-243:

- 9.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 9.2 Trim the D5369-1/-2 Cable Guard per Figure 8.
- 9.3 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-213/-214/-243 Float Skidtube, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 9.4 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.5 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.6 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.7 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.8 Reinstall the D3849-045 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 9.9 Install D5369-2 Cable Guard on the RH side of the aircraft using 2x AN3-50A bolts, 2x D5374-1 Bushings, 2x D3904-1 Washers, 2x MS21042L3 nuts as shown in Figure 8 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.10 Install D5369-1 Cable Guard on the LH side of the aircraft using 2x AN3-50A bolts, 2x D5374-1 Bushings, 2x D3904-1 Washers, 2x MS21042L3 nuts as shown in Figure 8 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.11 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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10.0 PARTS LIST:

Qty. -313	Qty. -314	PART NUMBER	DESCRIPTION
X		D119-646-313	SKIDTUBE PROTECTOR, LH
	X	D119-646-314	SKIDTUBE PROTECTOR, RH
6	6	D3904-1	WASHER
6	6	D4506-3	WASHER
1		D5369-1	CABLE GUARD, LH
	1	D5369-2	CABLE GUARD, RH
1		D5371-1	HOOK, LH
	1	D5371-2	HOOK, RH
1	1	D5372-1	PLUG
6	6	D5374-1	BUSHING
8	8	D5374-3	BUSHING
1	1	D5376-1	DRILLING JIG
4	4	AN3-45A	BOLT
6	6	AN3-47A	BOLT
6	6	AN3-50A	BOLT
18	18	NAS1149D0332J	WASHER
4	4	NAS1149D0316J	WASHER
10	10	MS21042L3	NUT

11.0 WEIGHT AND BALANCE

The following weight and balance changes are applicable:

Installation	Weight	LONGITUDINAL		LATERAL	
		Arm	Moment	Arm	Moment
D119-646-313 SKIDTUBE PROTECTOR, LH ON STANDARD SKIDTUBE	4.3 lb 1.95 kg	108.1 in 4.3 m	465 in-lb 8.4 kg-m	-43.4 in 1.7 m	-187 in-lb -3.3 kg-m
D119-646-314 SKIDTUBE PROTECTOR, RH ON STANDARD SKIDTUBE	4.3 lb 1.95 kg	108.1 in 4.30 m	465 in-lb 8.4 kg-m	43.4 in 1.7 m	187 in-lb 3.3 kg-m
△ D119-646-313 SKIDTUBE PROTECTOR, LH ON FLOAT SKIDTUBE	1.6 lb 0.72 kg	133.3 in 3.38 m	213 in-lb 2.4 kg-m	-43.4 in -1.7 in	69 in-lb 1.2 kg-in
△ D119-646-314 SKIDTUBE PROTECTOR, RH ON FLOAT SKIDTUBE	1.6 lb 0.72 kg	133.3 in 3.38 m	213 in-lb 2.4 kg-m	43.4 in 1.7 in	69 in-lb 1.2 kg-in

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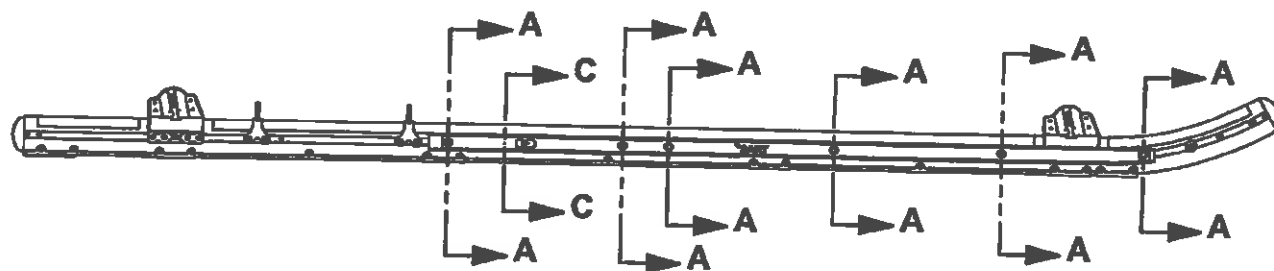


FIGURE 1: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-011/-012/-111/-112 SKIDTUBES)

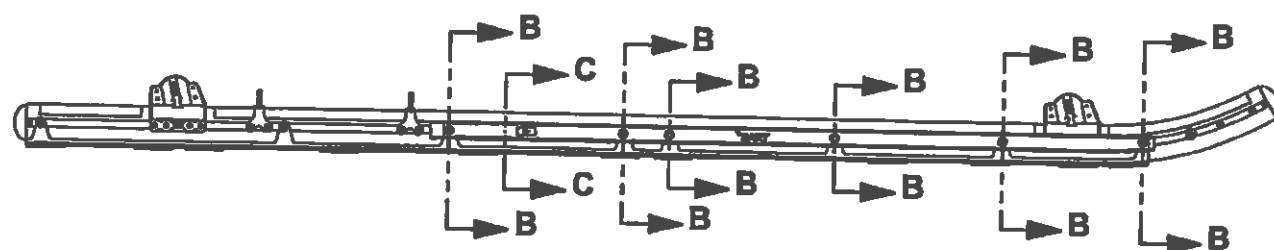


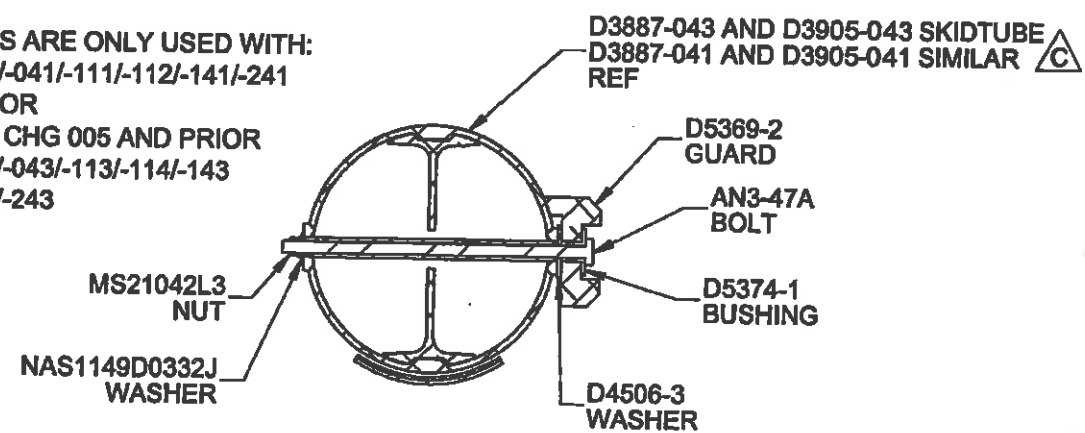
FIGURE 2: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-211/-212 SKIDTUBES)

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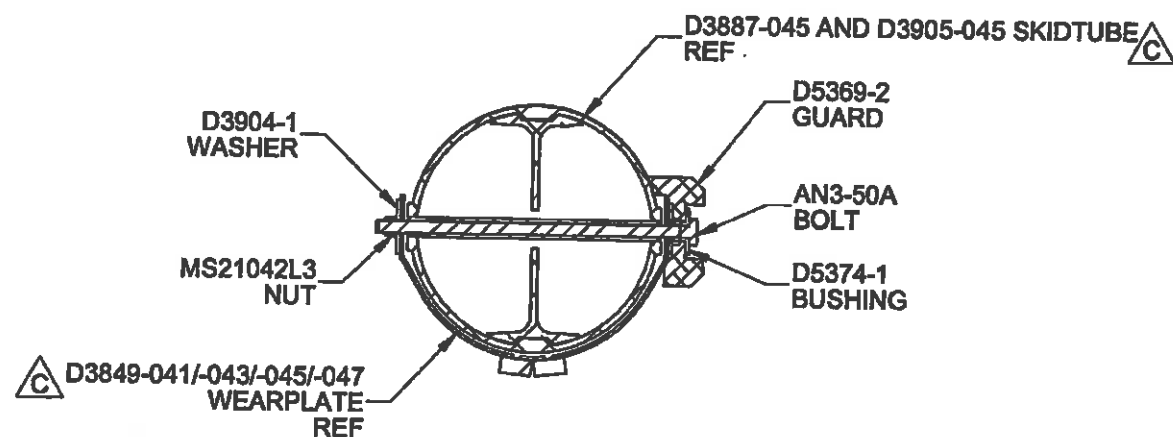
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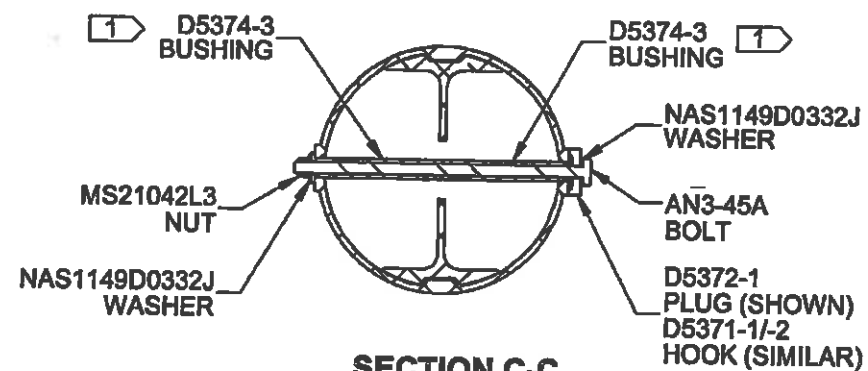
- 1) D5374-3 BUSHINGS ARE ONLY USED WITH:
 - D119-646-011/-012/-041/-111/-112/-141/-241
 CHG 004 AND PRIOR
 - D119-646-211/-212 CHG 005 AND PRIOR
 - D119-646-013/-014/-043/-113/-114/-143
 C- D119-646-213/-214/-243



SECTION A-A



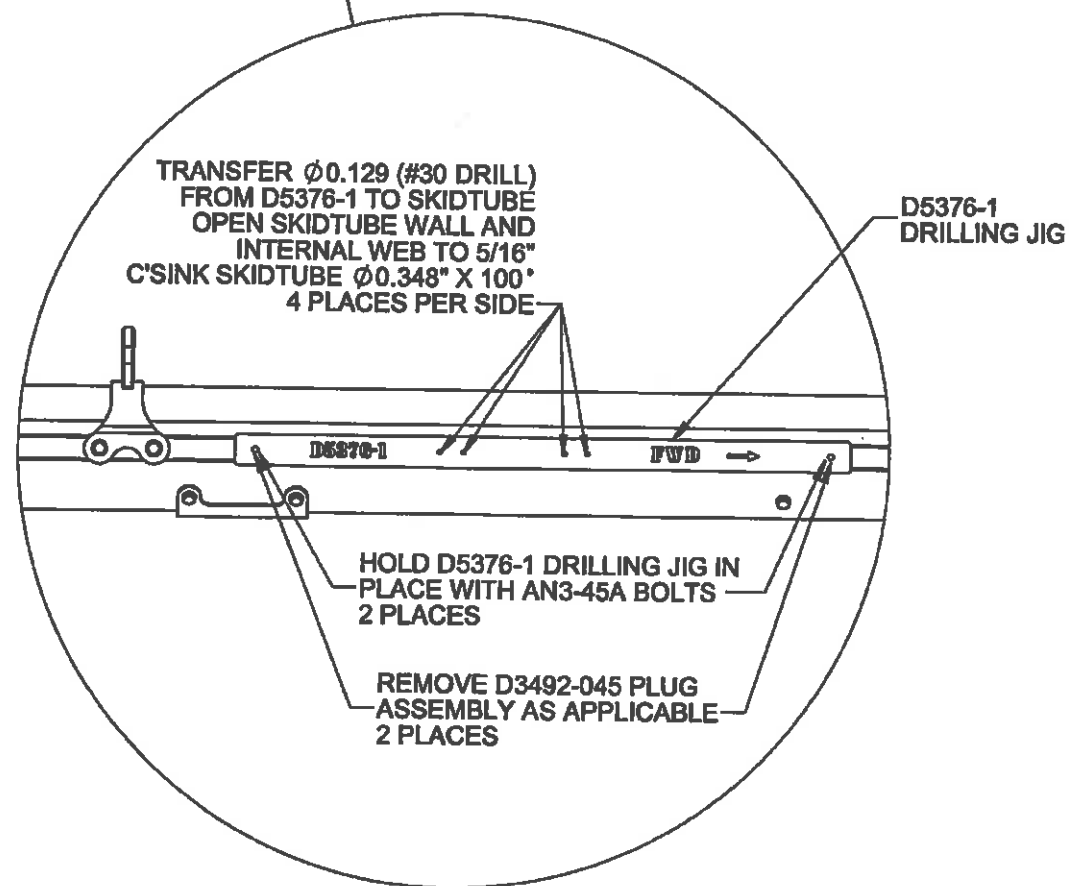
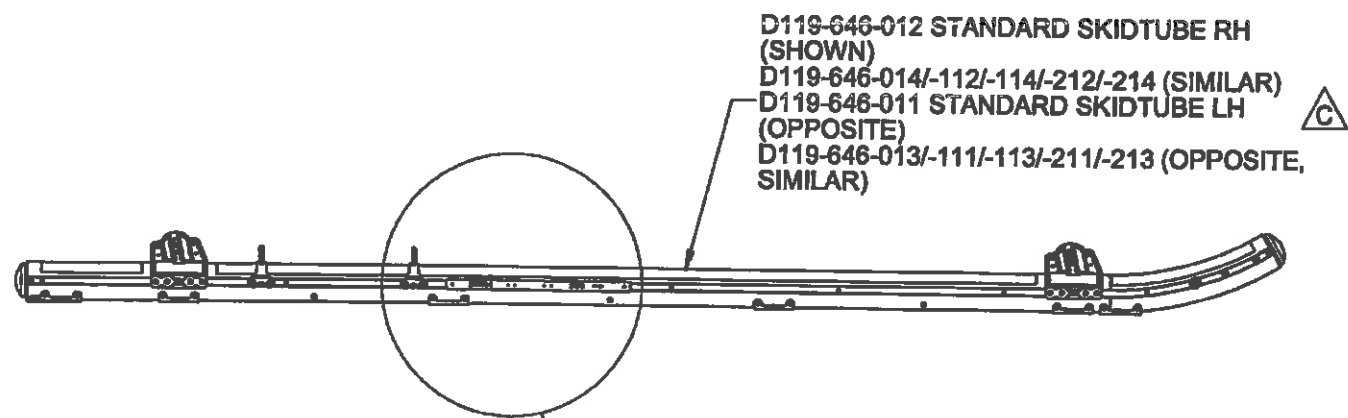
SECTION B-B



SECTION C-C
 (D5369-2 NOT SHOWN FOR CLARITY)

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DETAIL D

FIGURE 3: USING D5376-1 DRILLING JIG

D5376-1 DRILLING JIG IS ONLY USED WITH SKIDTUBE ASSEMBLIES:

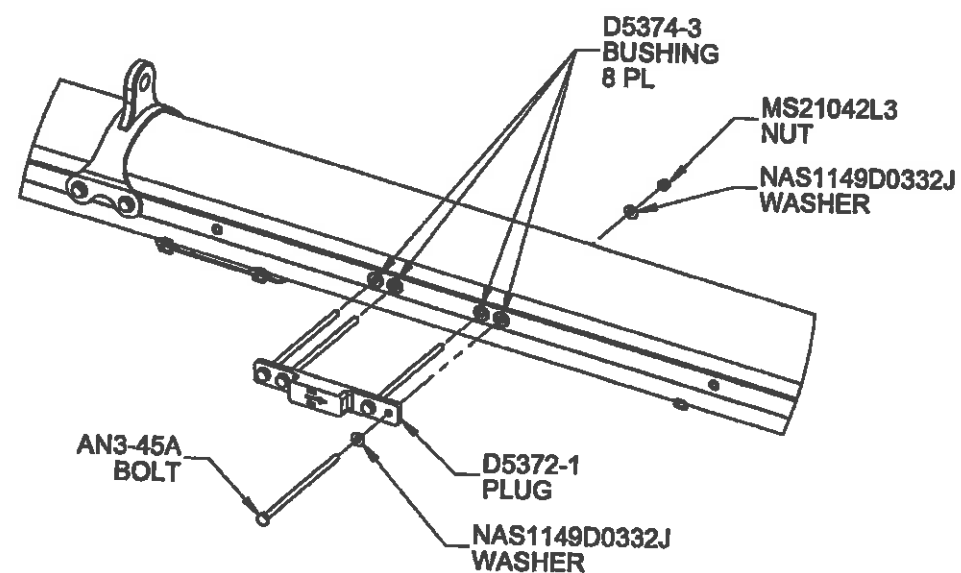
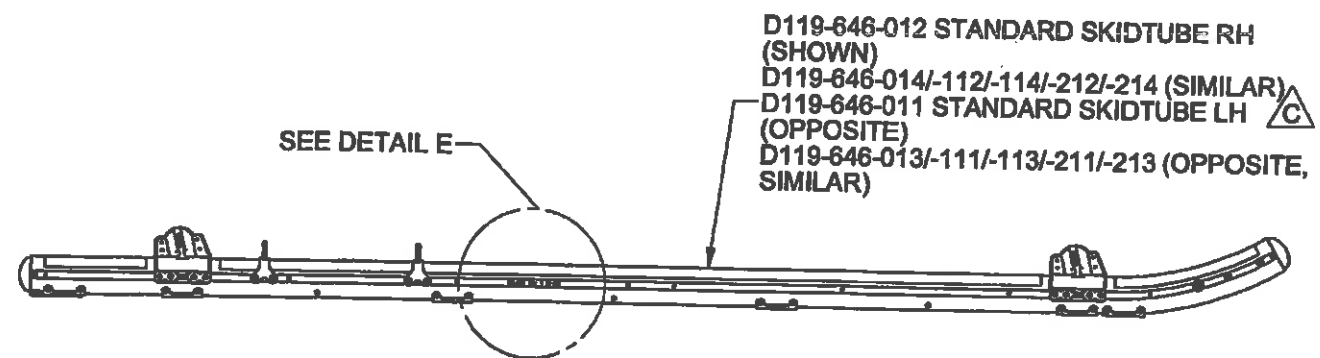
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR

- D119-646-211/-212 CHG 005 AND PRIOR

- D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 FLOAT SKIDTUBES

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DETAIL E

FIGURE 4: D5372-1 PLUG INSTALLATION

D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:

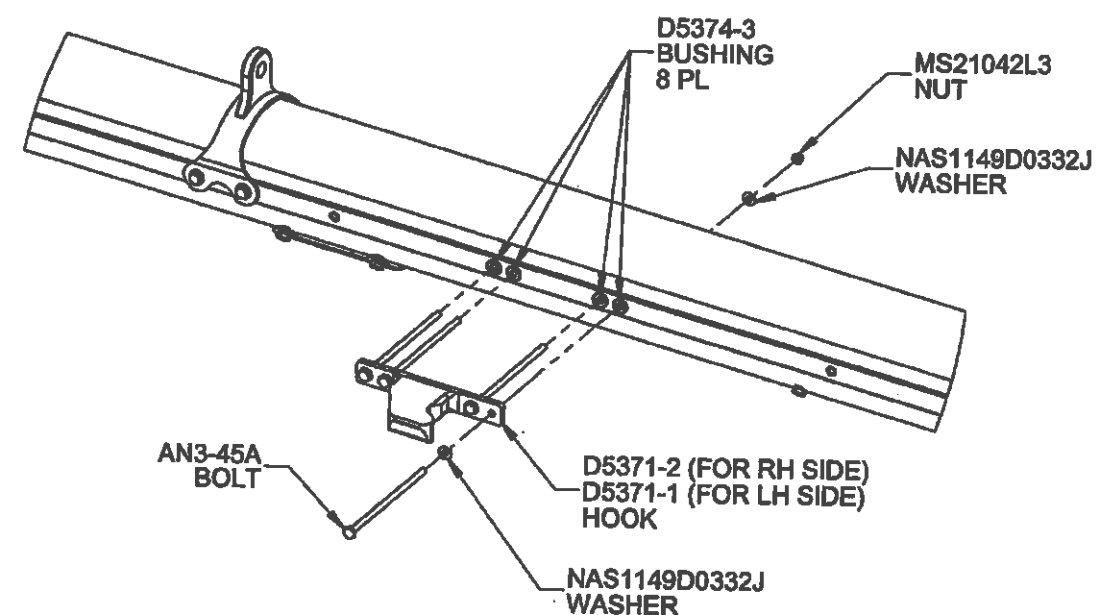
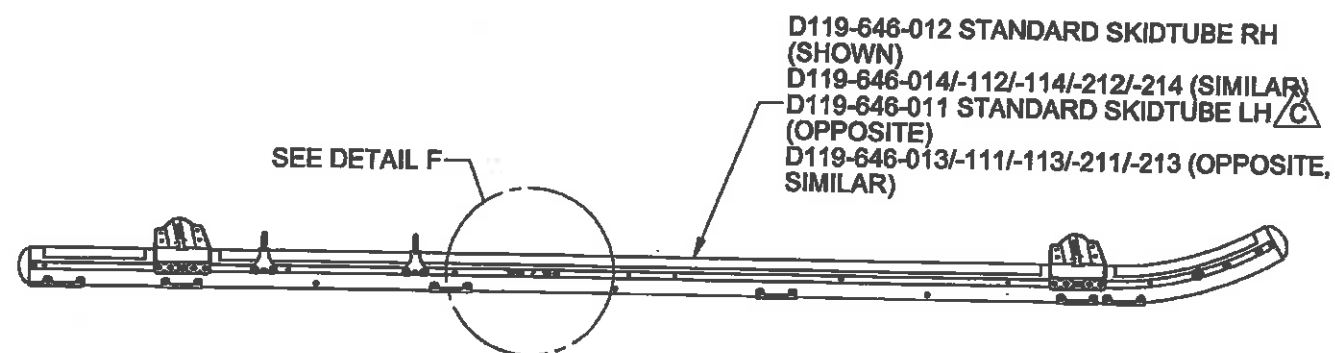
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR

- D119-646-211/-212 CHG 005 AND PRIOR

- D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 FLOAT SKIDTUBES

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DETAIL F

FIGURE 5: D5371-1/-2 HOOK INSTALLATION

D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR

- D119-646-211/-212 CHG 005 AND PRIOR

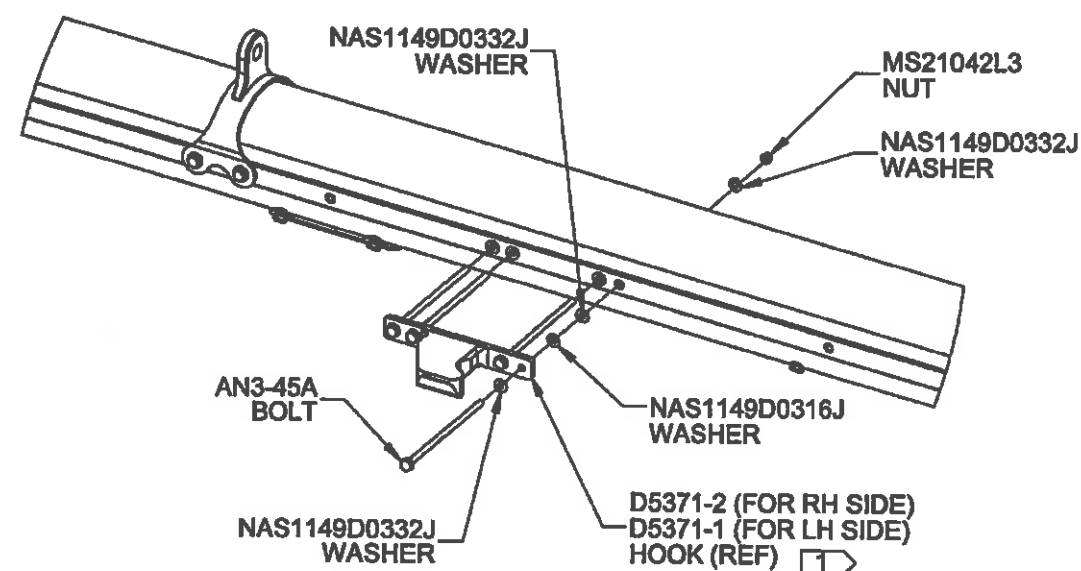
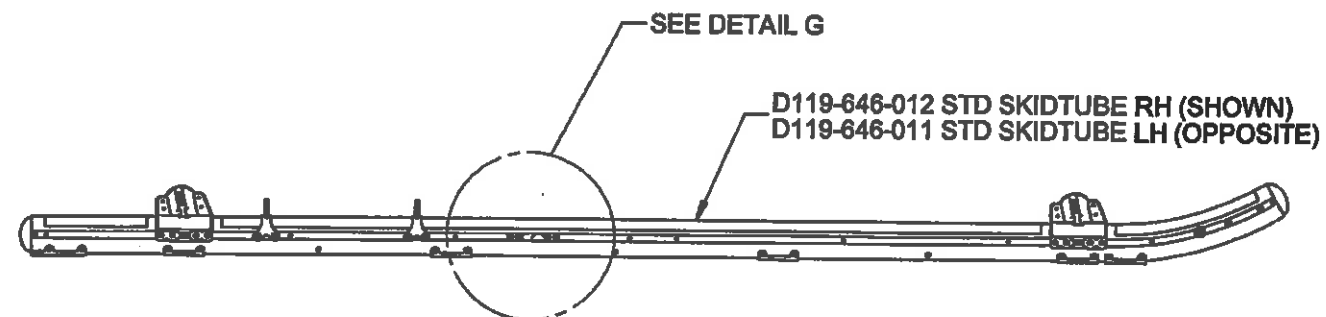
- D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 FLOAT SKIDTUBES

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NOTES:

1) D5371-1/2 HOOK ASSEMBLY SHOWN, D5372-1 PLUG ASSEMBLY SIMILAR.



DETAIL G

FIGURE 6: HOOK & PLUG INSTALLATION

NAS1149D0316J and NAS1149D0332J WASHER BUILDUP IS ONLY USED WITH SKIDTUBE ASSEMBLIES:
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 005 AND SUBSEQUENT
- D119-646-211/-212 CHG 006 AND SUBSEQUENT

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 14 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
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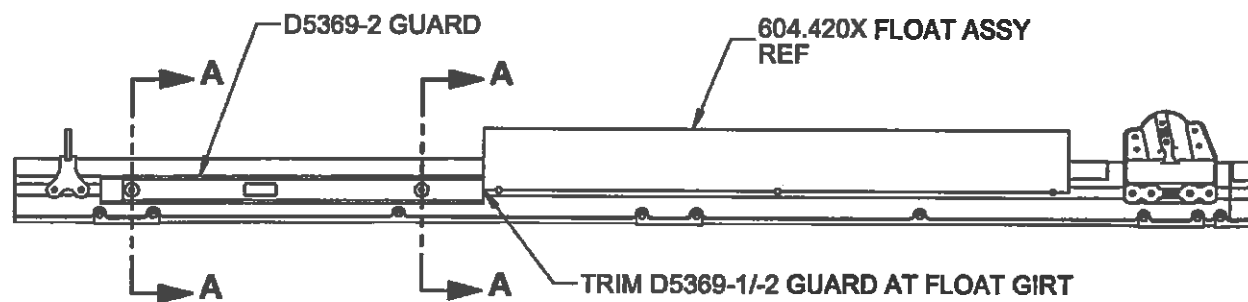


FIGURE 7: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-013/-014/-113/-114 SKIDTUBES)

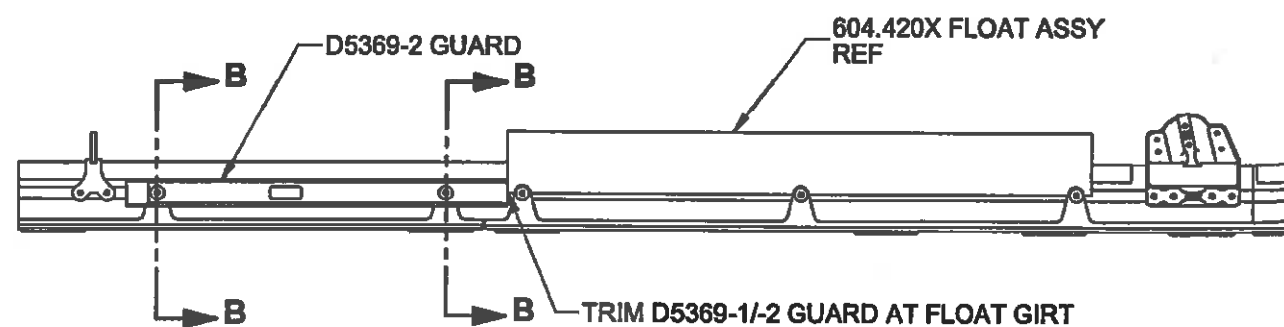


FIGURE 8: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-213/-214 SKIDTUBES)

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CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 15 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
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